

Emily Bache

TECH COACH



CONSULTANT

Software Excellence through Technical
Coaching

October 2024

Talk Description - 25 minutes

How do you ensure Software Excellence? Code that is well-designed and easy to understand is cheaper to extend and modify - so you can deliver more value, sooner. Many organizations struggle with older codebases that use outdated designs and have too much cruft. The recent boom in AI coding assistants shows a great deal of promise for helping developers to write new code but these tools perform poorly at refactoring and enhancing existing code. How can we ensure developers have the skills they need to remove cruft safely and to develop new features with high quality?

(rest of description not used)

I found that the technical coaching I was doing was addressing those kinds of issues successfully, but it was slow to scale up to large projects where there are tens of teams of developers working on different parts of the same codebase. Each team I worked with got the benefits of intense coaching and mentoring for their situation, but it was taking too long to have a noticeable impact on the codebase as a whole.

Recently I've been using a different approach to raising code quality and enhancing developer skills. The basic idea is regular, short interactive training for teams of developers, led by a peer. They use high quality materials and content I've designed. This initiative is modern, relevant and shown to work for ordinary software teams. It's based on everything I know about teaching and learning coding skills from my 25-year career, 2 books and thousands of hours coaching developers. In this talk I will explain what I've found and how you could adapt these ideas and materials for your situation.

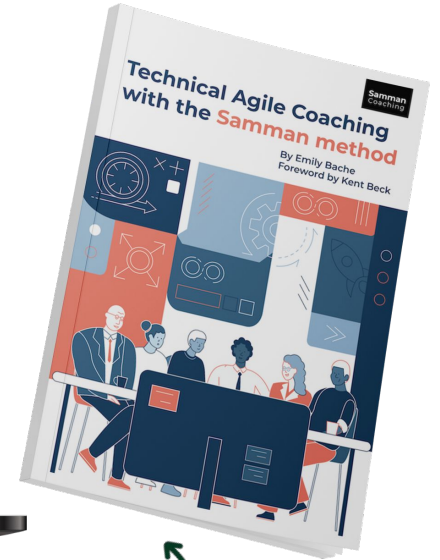
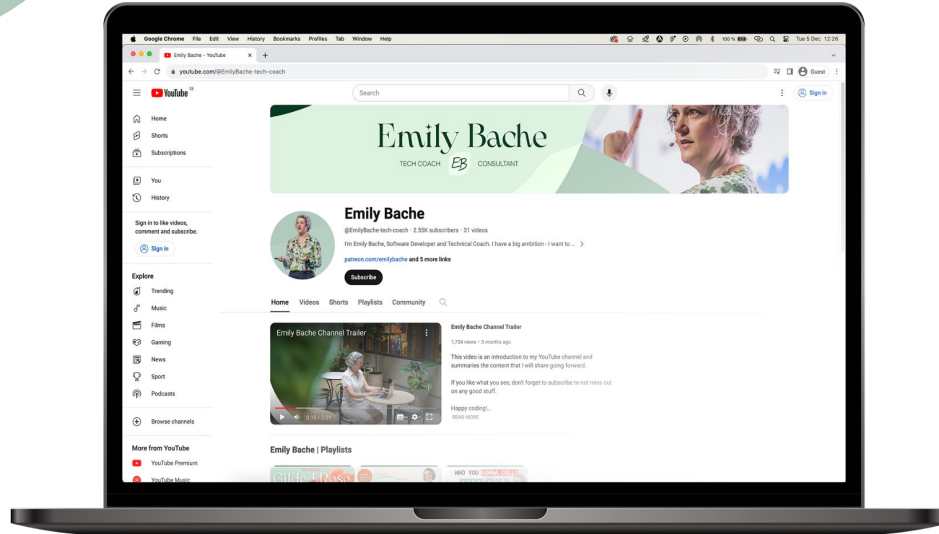
Emily Bache

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YouTube Channel



@emilybache

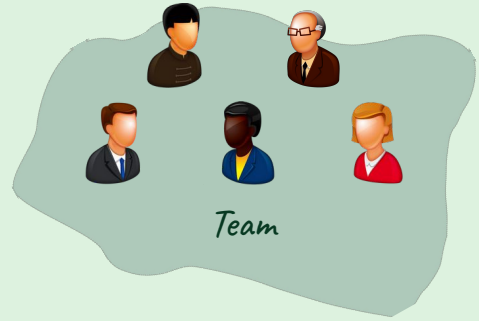
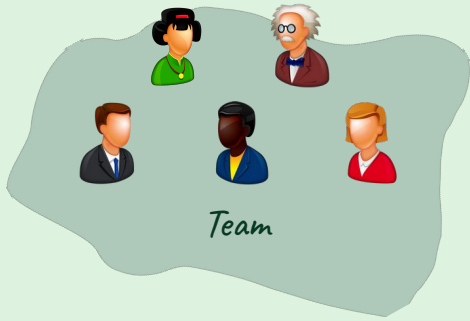
emily@bacheconsulting.com

Book

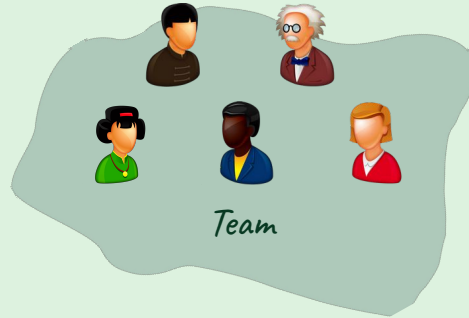
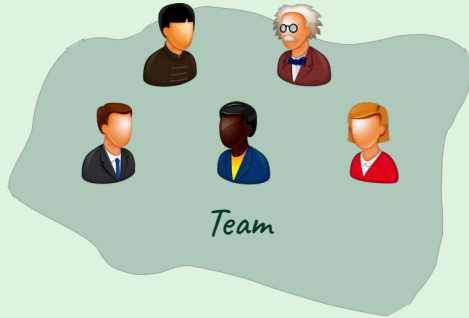
Situation

Modern Software

Development is complex

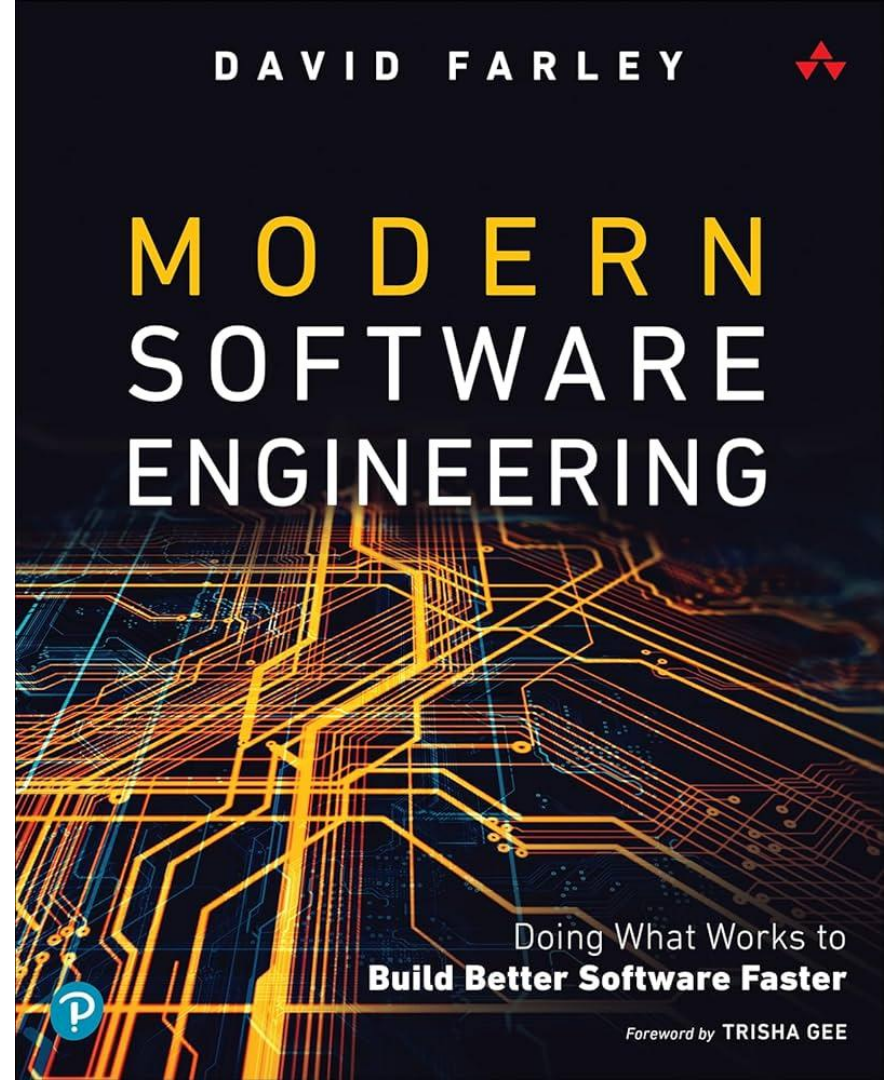


Large organizations



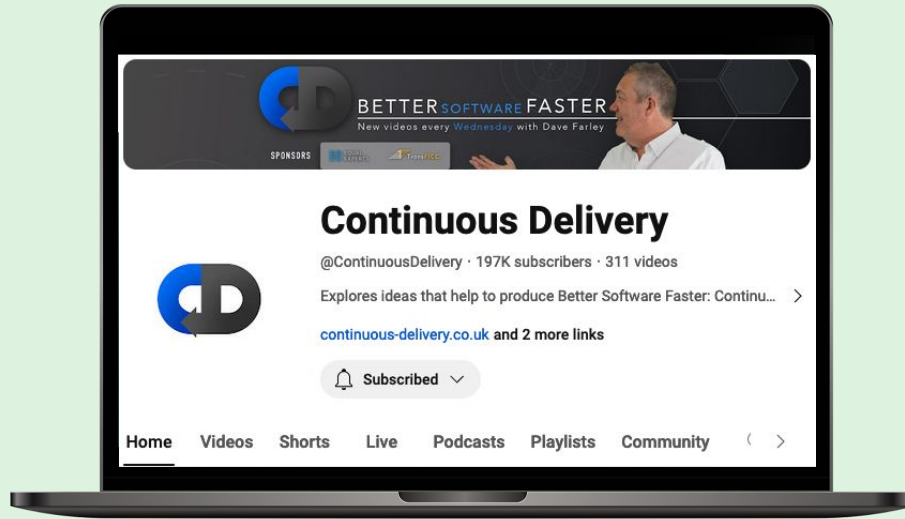
Software Engineering

- Managing Complexity
- Optimize for Learning

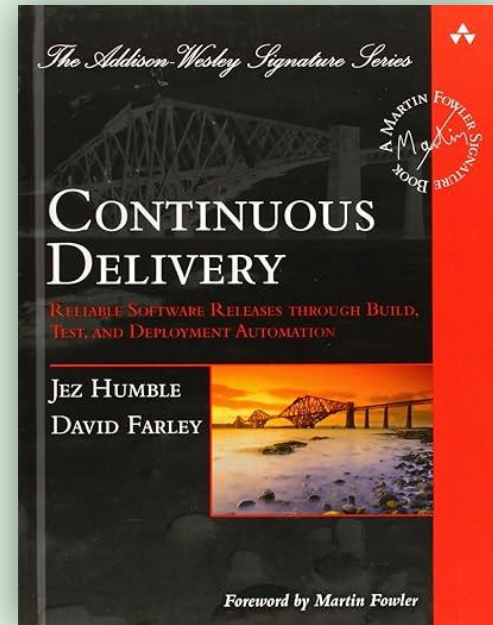


Dave Farley

↪ YouTube Channel

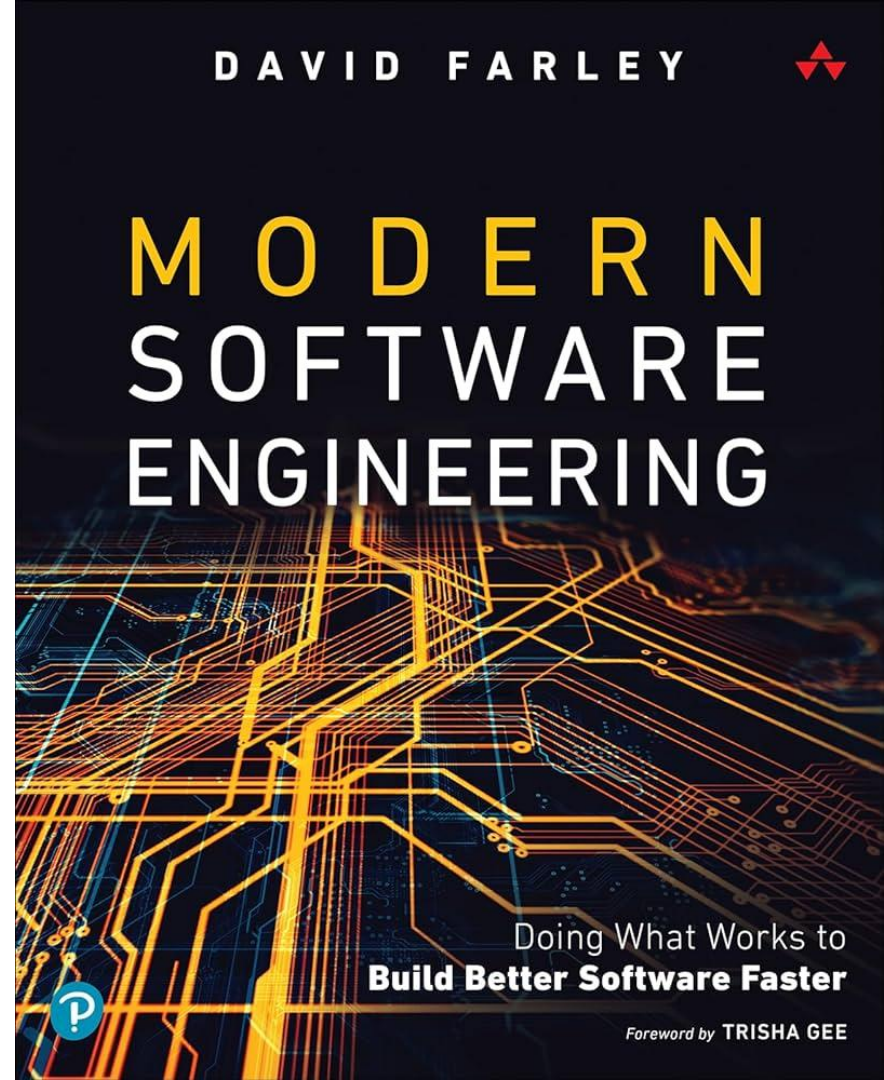


Award-winning book ↪



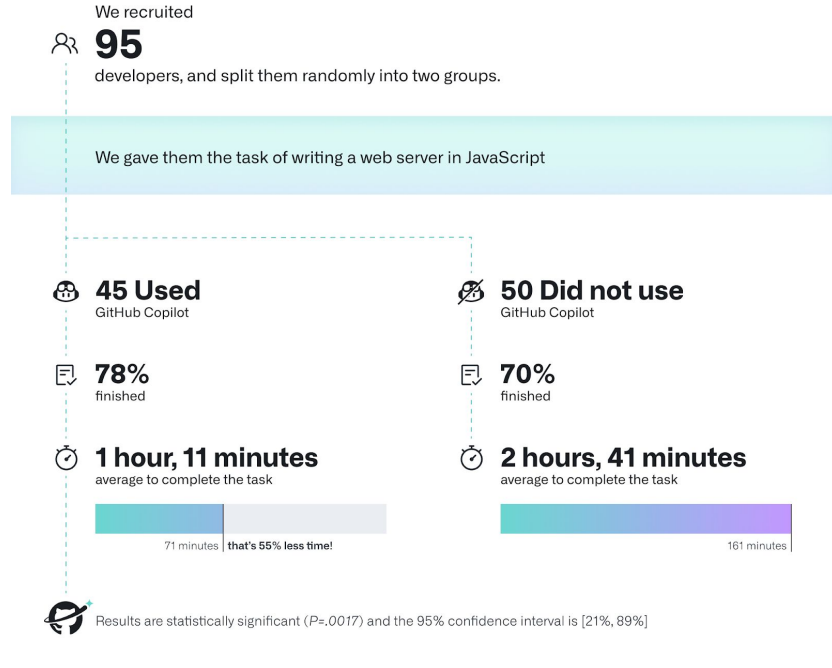
Manage Complexity

- Modularity
- Cohesion
- Separation of Concerns
- Abstraction
- Loose Coupling



What about AI?

Gen AI coding assistants help you
“code **55%** faster”



<https://github.blog/news-insights/research/research-quantifying-github-copilots-impact-on-developer-productivity-and-happiness/>

Design Complexity

- Large existing codebases
- Too much “cruft”



Image credit: https://flickr.com/photos/ishikawa_takanori/

What about AI?

Gen AI coding assistants refactor correctly **37%** of the time

9 January 2024

Refactoring vs Refuctoring:

Advancing the state of AI-
automated code improvements

By Adam Tornhill, Markus Borg, PhD & Enys Mones, PhD

Software is
built by teams



Big Idea

Collaborative Software Design

TDD is essential as a cornerstone for an engineering approach to software development. I don't know of any other practice that is as effective at encouraging and amplifying our ability to create good design.

– Dave Farley

DAVID FARLEY



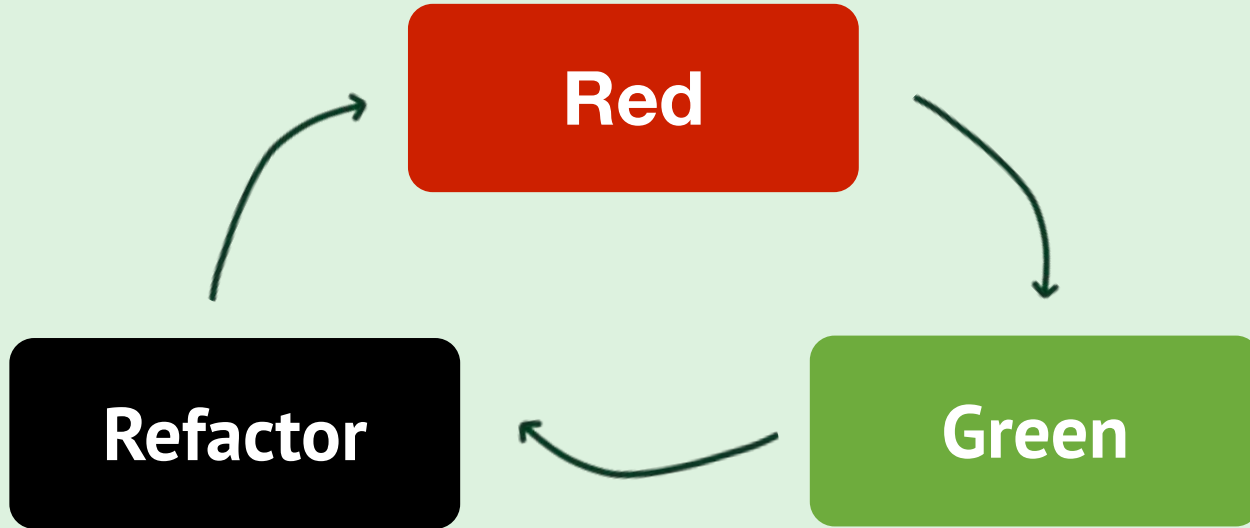
MODERN SOFTWARE ENGINEERING

Doing What Works to
Build Better Software Faster

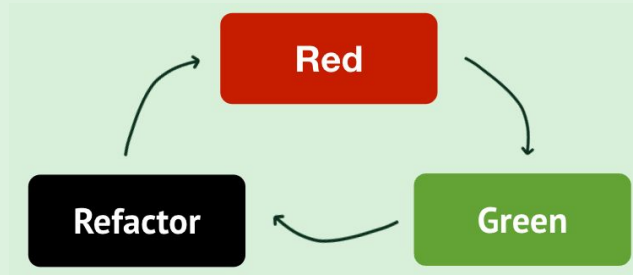
Foreword by TRISHA GEE



Test-Driven
Development



TDD is an umbrella term

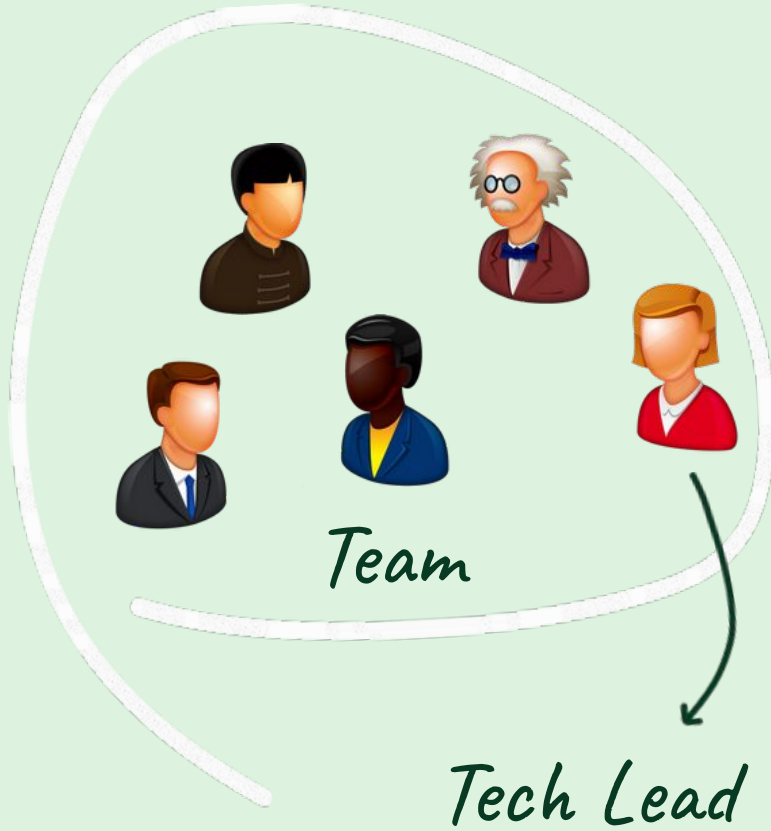


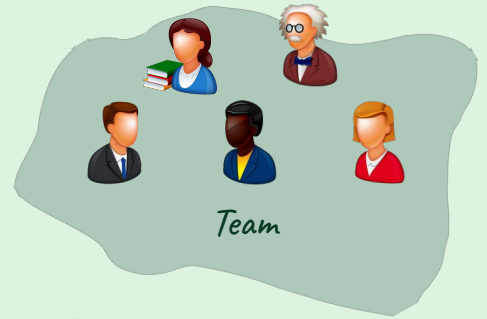
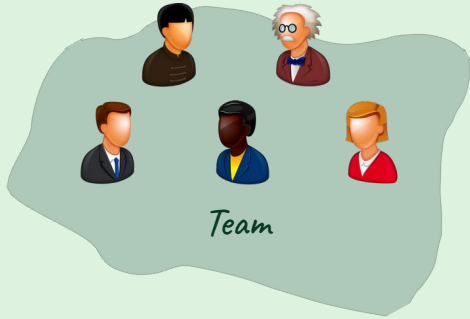
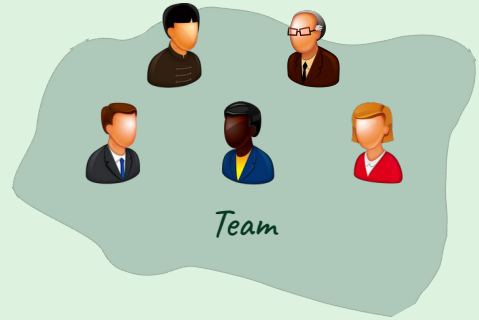
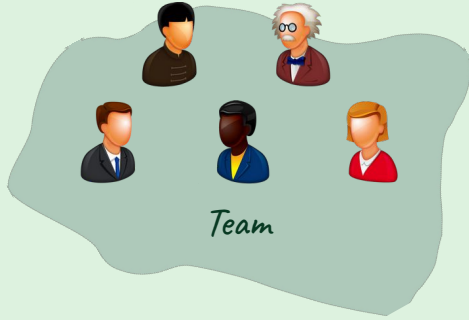
Skills for evolving code design to
Manage Complexity

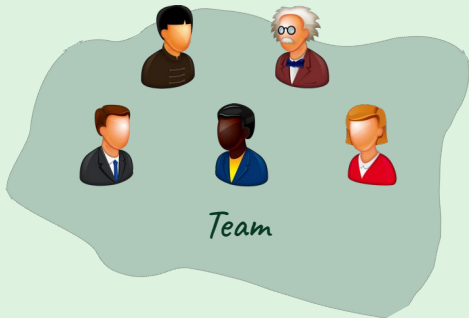
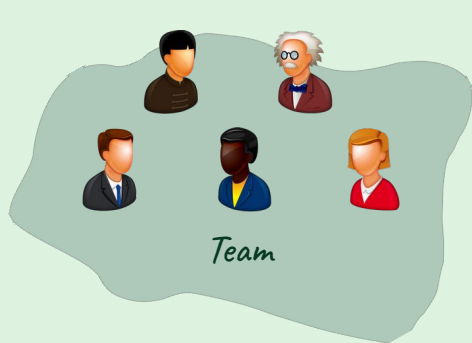
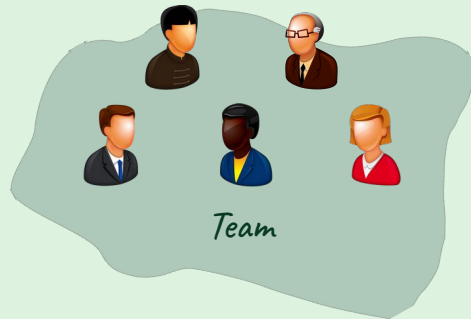
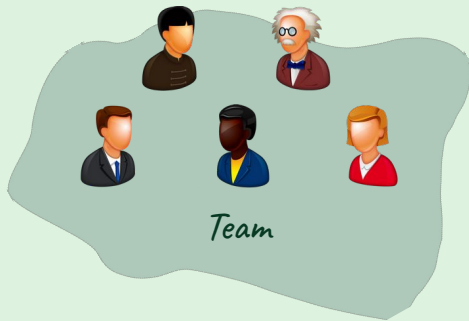
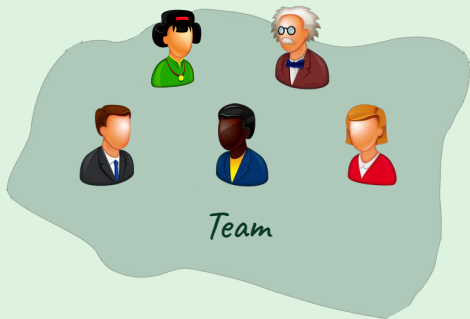
Technical Excellence

Use effective engineering practices, continually

- Increasing Code Quality
- Removing Cruft







Technical Coaching

A coach works with one or more development teams

- Teaching coding skills
- Building engineering culture



Teambuilding

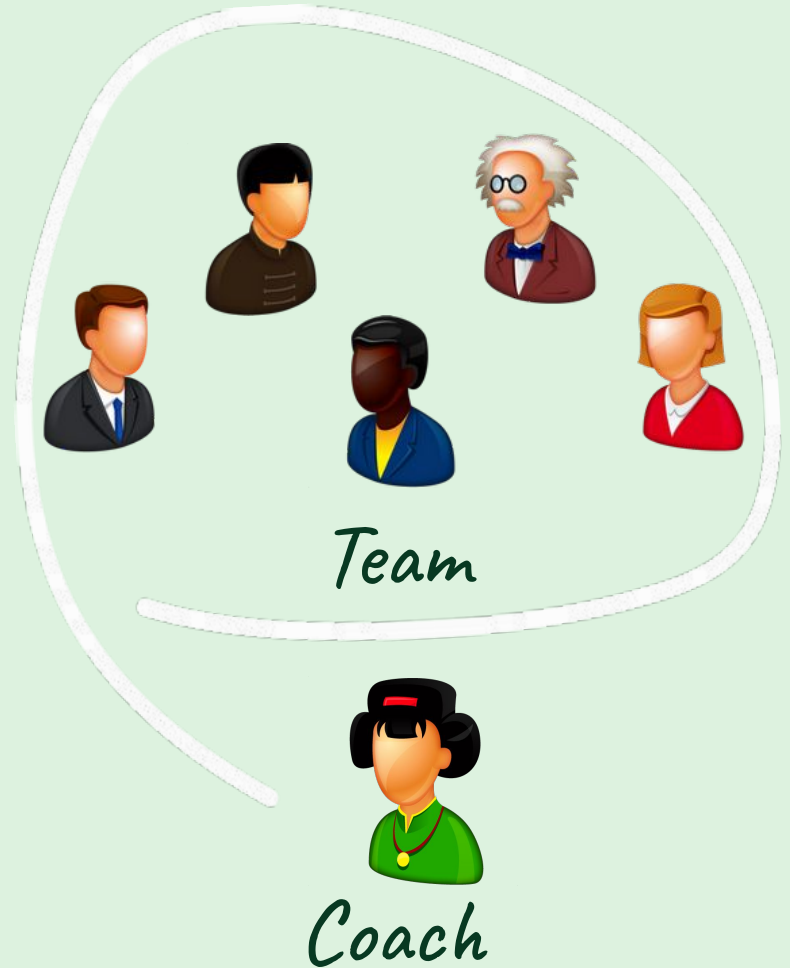


[Credit: IDEO on flickr](#)

Technical Coaching

Two main activities:

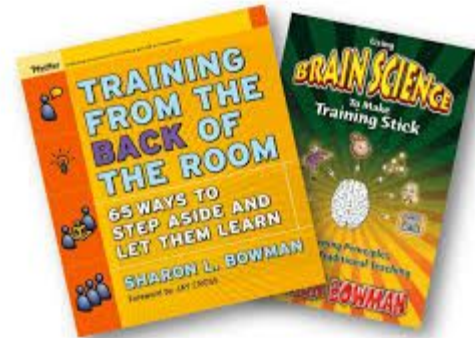
- Learning Hours
- Ensemble



Samman method

Learning Hours

- Hands-on and interactive
- Team Learning



Learning Hours: Code Katas

https://sammancoaching.org/kata_descriptions

FizzBuzz

Write a program that prints the numbers from 1 to 100. But for multiples of three print "Fizz" instead of the number and for the multiples of five print "Buzz". For numbers which are multiples of both three and five print "FizzBuzz".

Sample output:

```
1
2
Fizz
4
Buzz
Fizz
7
8
Fizz
Buzz
11
```

Vending Machine Kata

In this exercise you will build the brains of a vending machine. It will accept money, make change, maintain inventory, and dispense products. All the things that you might expect a vending machine to accomplish. Features are detailed below.

Accept Coins

The vending machine will accept valid coins (nickels, dimes, and quarters) and reject invalid ones (pennies). Coin values:

- Penny - 1 cent
- Nickel - 5 cents
- Dime - 10 cents
- Quarter - 25 cents

When a coin is inserted the amount of the coin will be added to the current amount and the display updated. When there are no coins inserted, the machine displays INSERT COIN. Rejected coins will return the coin.

Mars Rover

A squad of robotic rovers are to be landed by NASA on a plateau on Mars.

This plateau, which is curiously rectangular, must be navigated by the rovers so that their on board cameras can get a complete view of the surrounding terrain to send back to Earth.

A rover's position is represented by a combination of an x and y co-ordinates and a letter representing one of the four cardinal compass points. The plateau is divided up into a grid to simplify navigation. An example position might be 0, 0, N, which means the rover is in the bottom left corner and facing North.

In order to control a rover, NASA sends a simple string of letters. The possible letters are 'L', 'R' and 'M'. 'L' and 'R' makes the rover spin 90 degrees left or right respectively, without moving from its current spot.

'M' means move forward one grid point, and maintain the same heading.

Assume that the square directly North from (x, y) is (x, y+1).

Ensemble

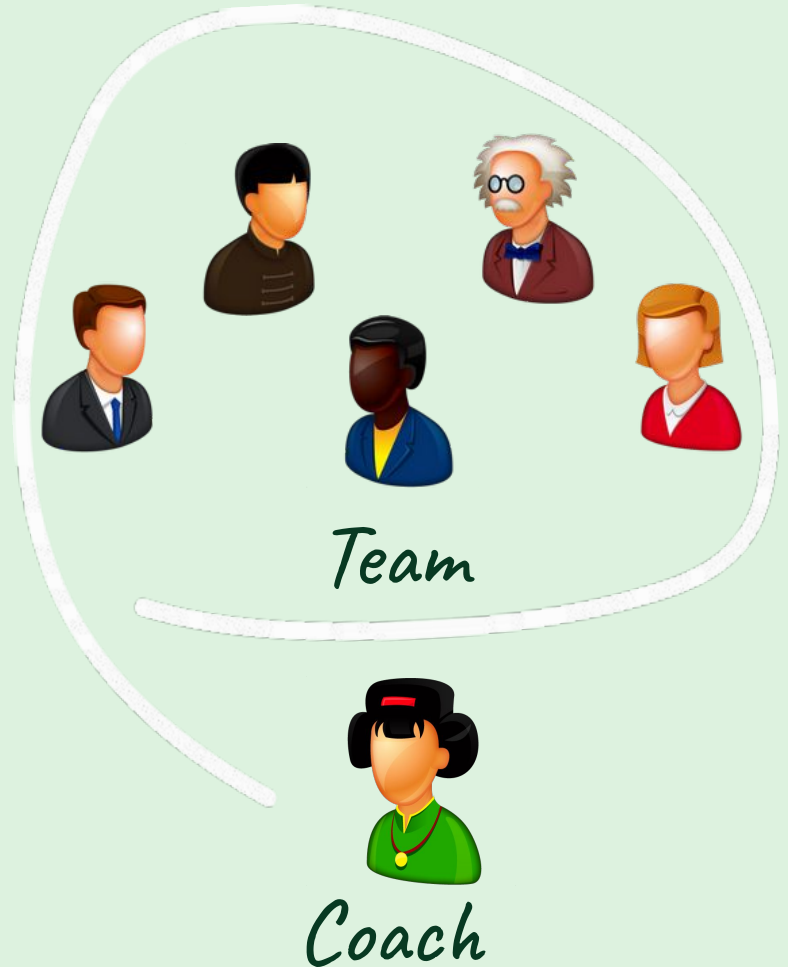
- Whole team
- Collaborate and write code together
- Coach acts as mentor



Coaching an Ensemble

Mentor & encourage

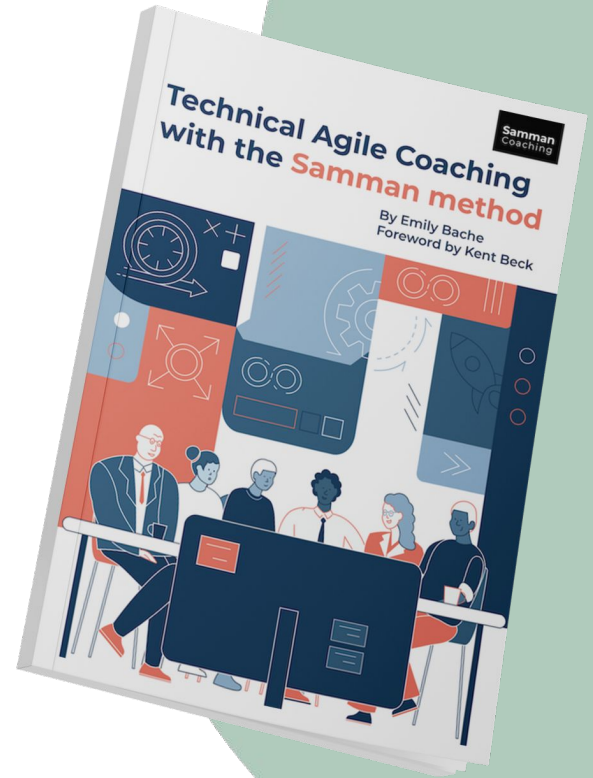
- Fantastic forum for technical communication
- Embed new skills and ways of working



Technical Coaching:

The Samman Method

- “Samman” means “Together”



The Samman Method

- it works

- Positive impacts on team morale & skills
- Ongoing improvements
- Other coaches use the Samman method too





[Home](#) [Katas](#) [Learning Hours](#) [Training](#) [Activities](#) [Reference](#) [Society](#) [Contact](#)

The Samman Technical Coaching Society

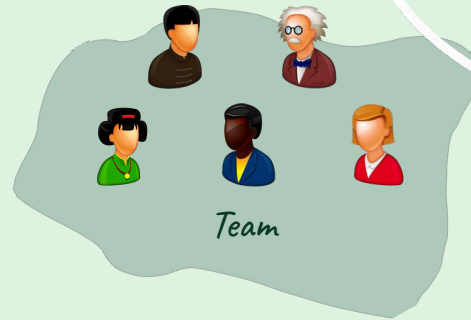
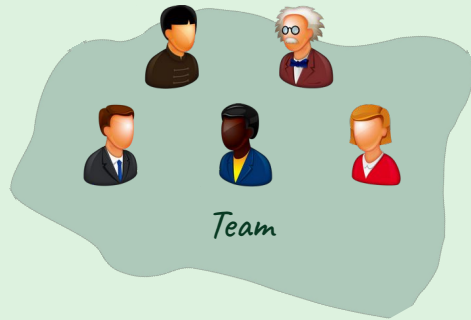
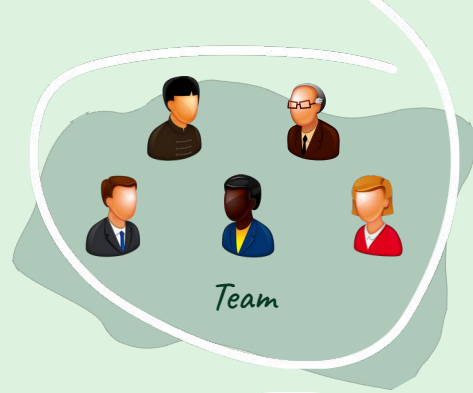
This site is owned by the Samman Technical Coaching Society which exists to help technical coaches to do a better job. The society comprises many [Members and Contributors](#). Find out more about the work of the Samman Society:

- Samman Society [Events](#).
- Samman Coaching [Training Courses](#)

You may also be interested in [becoming a member](#), or to sign up for our [Newsletter](#).

Spreading tech coaching

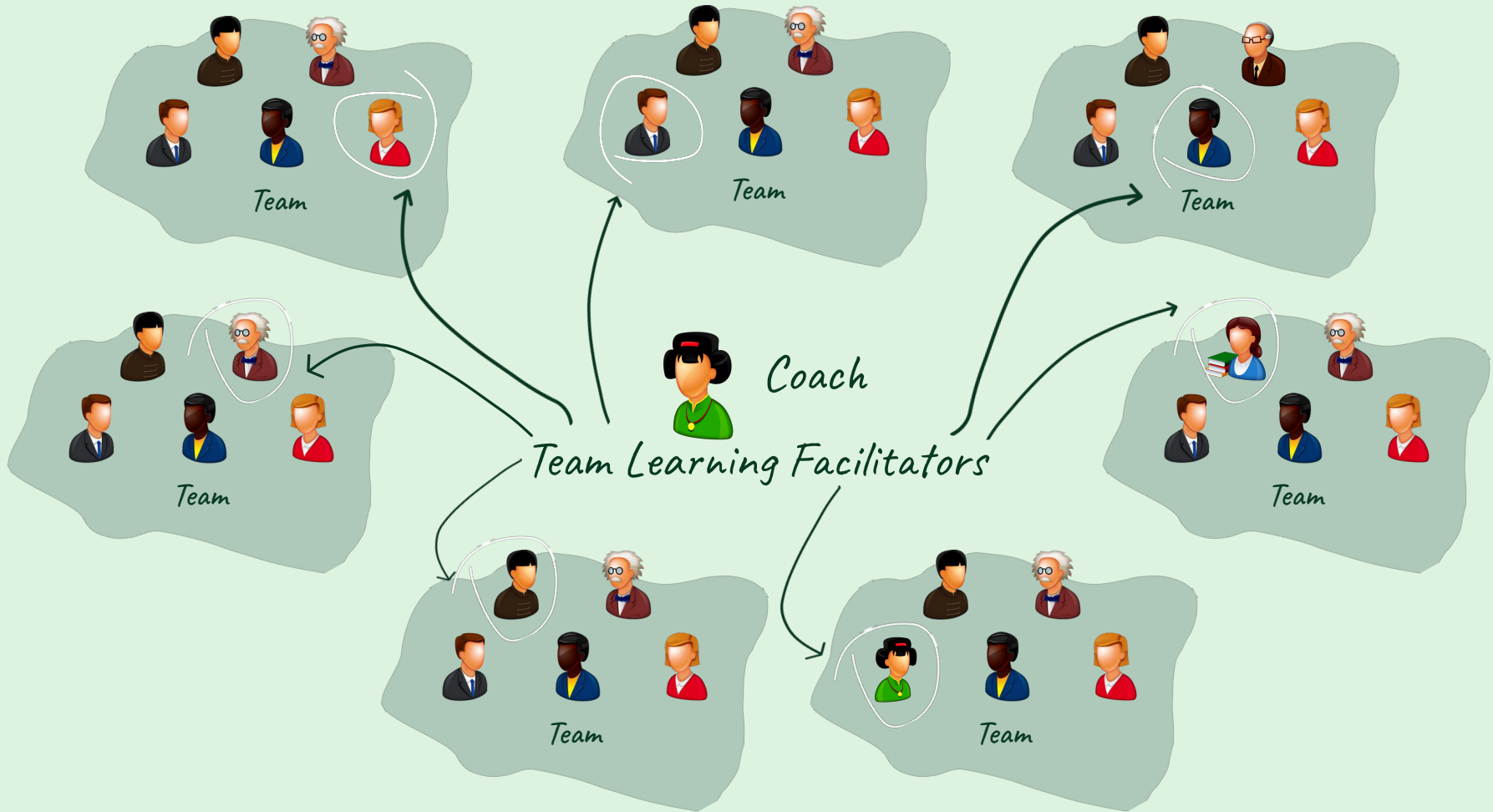
Large organizations
have many teams





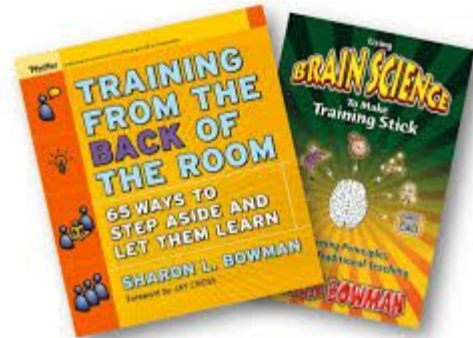
Additional External Coaches





Team Learning *Sessions*

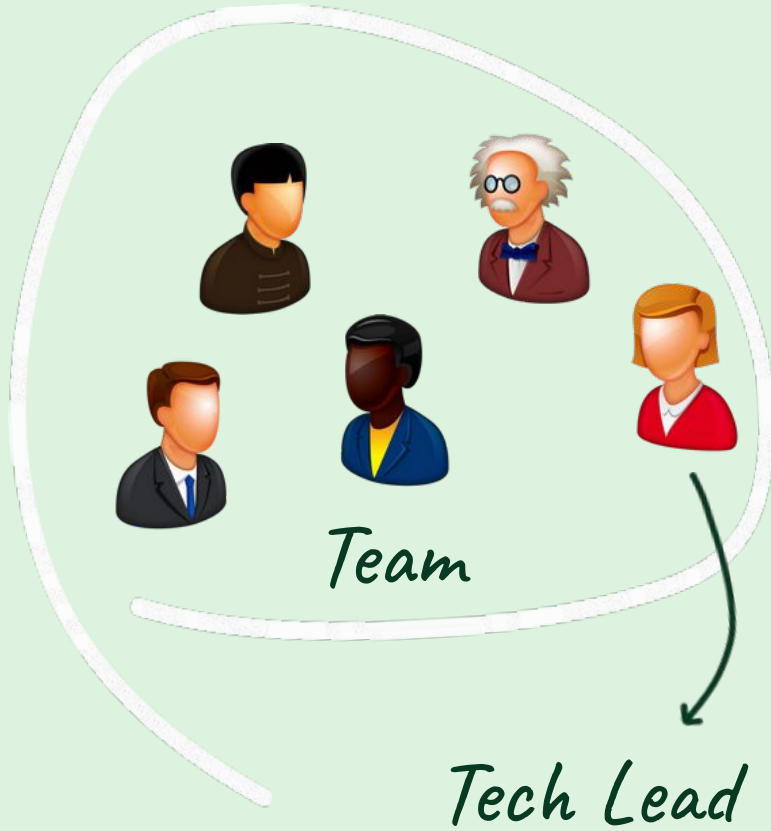
- Samman Learning Hour
- Hosted by a team member
- Teambuilding & skill acquisition



Tech Lead

Mentoring is part of your job already

- No time allocated
- No support available



Idea

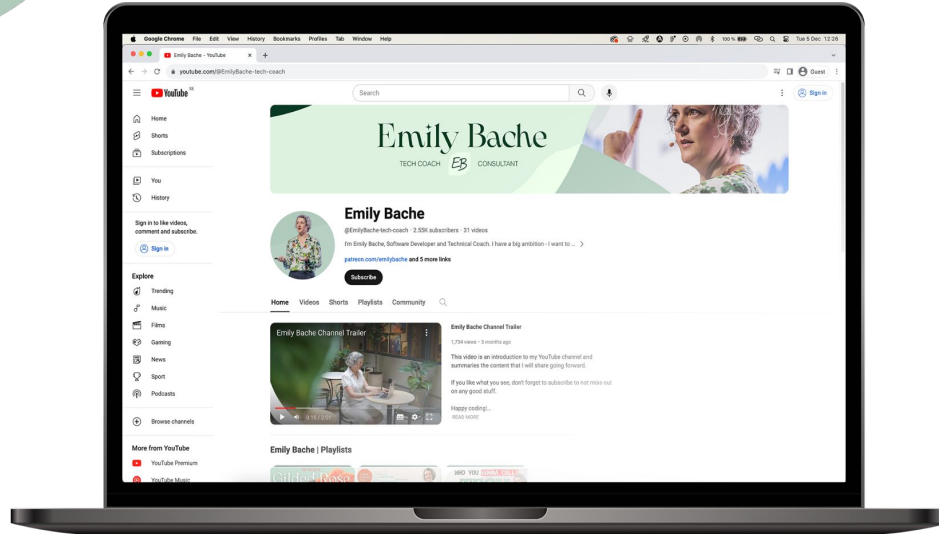
Videos make it easy enough

- Ordinary developers can host



Materials

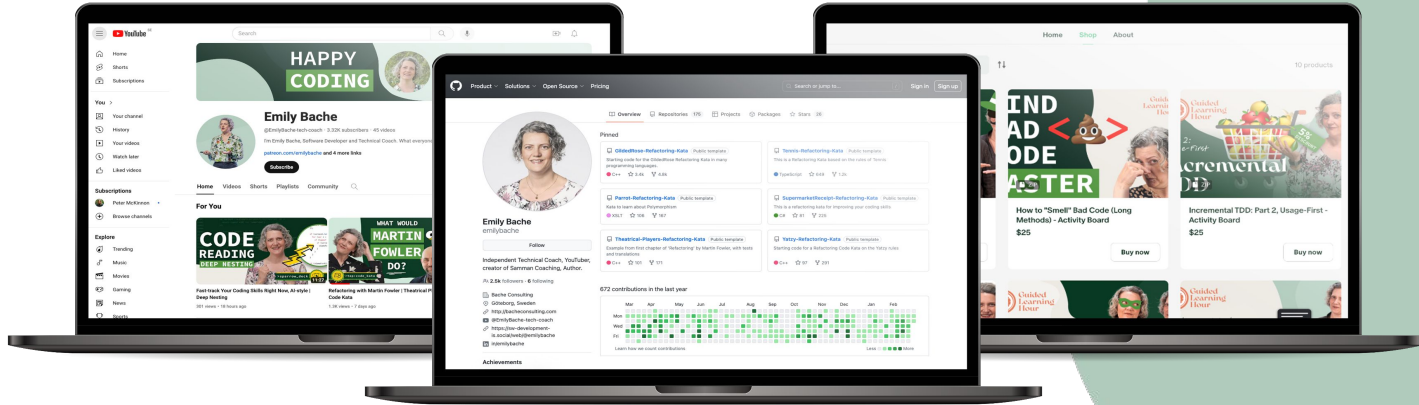
YouTube Channel



Materials

Videos

Activity Boards (Miro)



Code Exercises

Session Outline



Session length: 1 hour

2 min

Intro

5 - 10 min

“**Connect**” Team Discussion -
Activity Board

5 - 15 min

“**Concept**” Presentation
with Coding Demo - Video

15 - 30 min

“**Concrete**” Coding Exercise in Pairs

5 - 10 min

“**Conclusions**” Individual or Team
Reflection & Action Plan - Activity
Board

2 min

Call to Action

Tech Lead

Session Facilitator

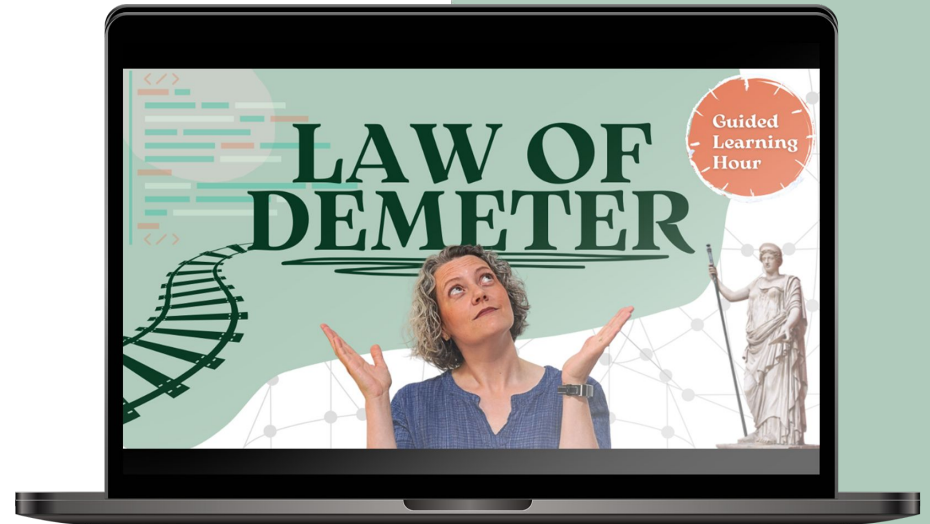
- Watch the video beforehand
- Host the meeting
- Lead discussions and activities



Team Learning Sessions

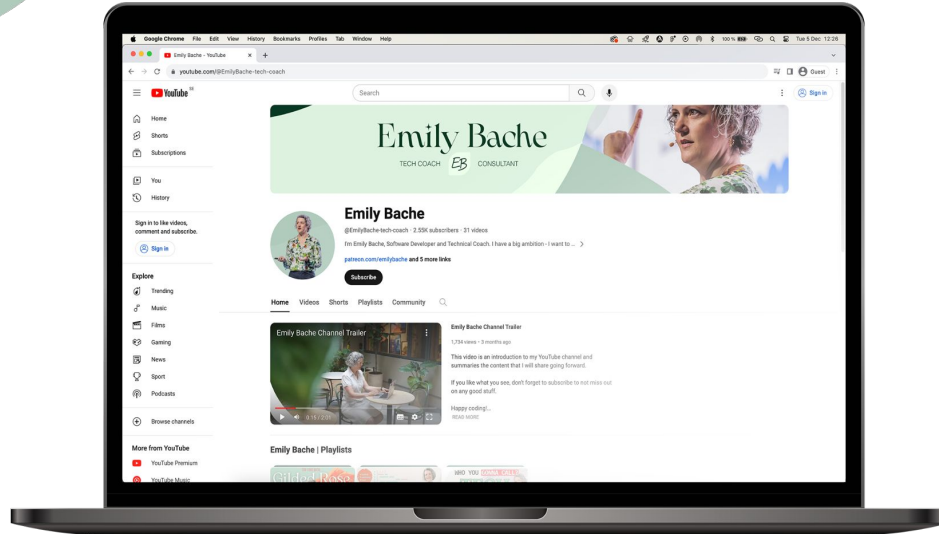
Modern & Relevant

- Based on my experience
- Structured & Interactive



Try It!

YouTube Channel



Big Corporation

Pilot Programme - good results so far



Updated: Nov 28, 2023

Team Learning for Software Excellence

Introductions and a collection of Guided Learning Hours to be used by Team Learning Facilitators

Followers: 9

Your Rating: ★★★★★ (2)

5.0 (2)

Overview

In the top section, next to the link to the training program, you will find some other information related to Team Learning. Below you will find the selected learning hours per training session for current, past and future participants of the Team Learning Facilitator training.

Reorder Edit Add

Contents Discussions

Introductions & Overview

- Announcement of Team Learning**
Basic Ready to Assess 1m 12s
The grand plan is this. We want to increase Software Excellence at
Event ★ 4.3
- Is High Quality Software Worth the Cost?**
Basic Ready to Assess 30m
A common debate in software development projects (also at
Article ★ 5.0
- Presentation**
Basic Ready to Assess 1h 15m
Agile team learning
Module ★ 4.3

C# Team Learning Sessions

- Refactoring - what you need to know**
Basic Ready to Assess 45m 48s
Are you doing refactoring while you develop? If you've got legacy code or technical debt, then getting good at
Module ★ 5.0
- Three Parts of a Test**
Basic Ready to Assess 44m 13s
Unit test code is not usually shipped to the customer, and it often gets less care and attention than the code that
Module ★ 5.0
- Law of Demeter**
Basic Ready to Assess 41m 20s
Do you have train wrecks in your code? I don't think that would be a good thing! What can you do to
Module ★ 5.0
- TDD - what it is and should care**
Basic Ready to Assess
Test-Driven Developer mentioned in the Accels as one of the technical p
Module ★ 5.0

Next problem

Getting Beyond Code

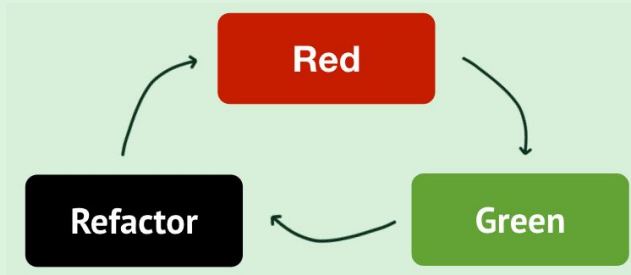
Katas

Technical Coaching

- Learning Hours
- **Ensemble**



When they get going with TDD
People will need more



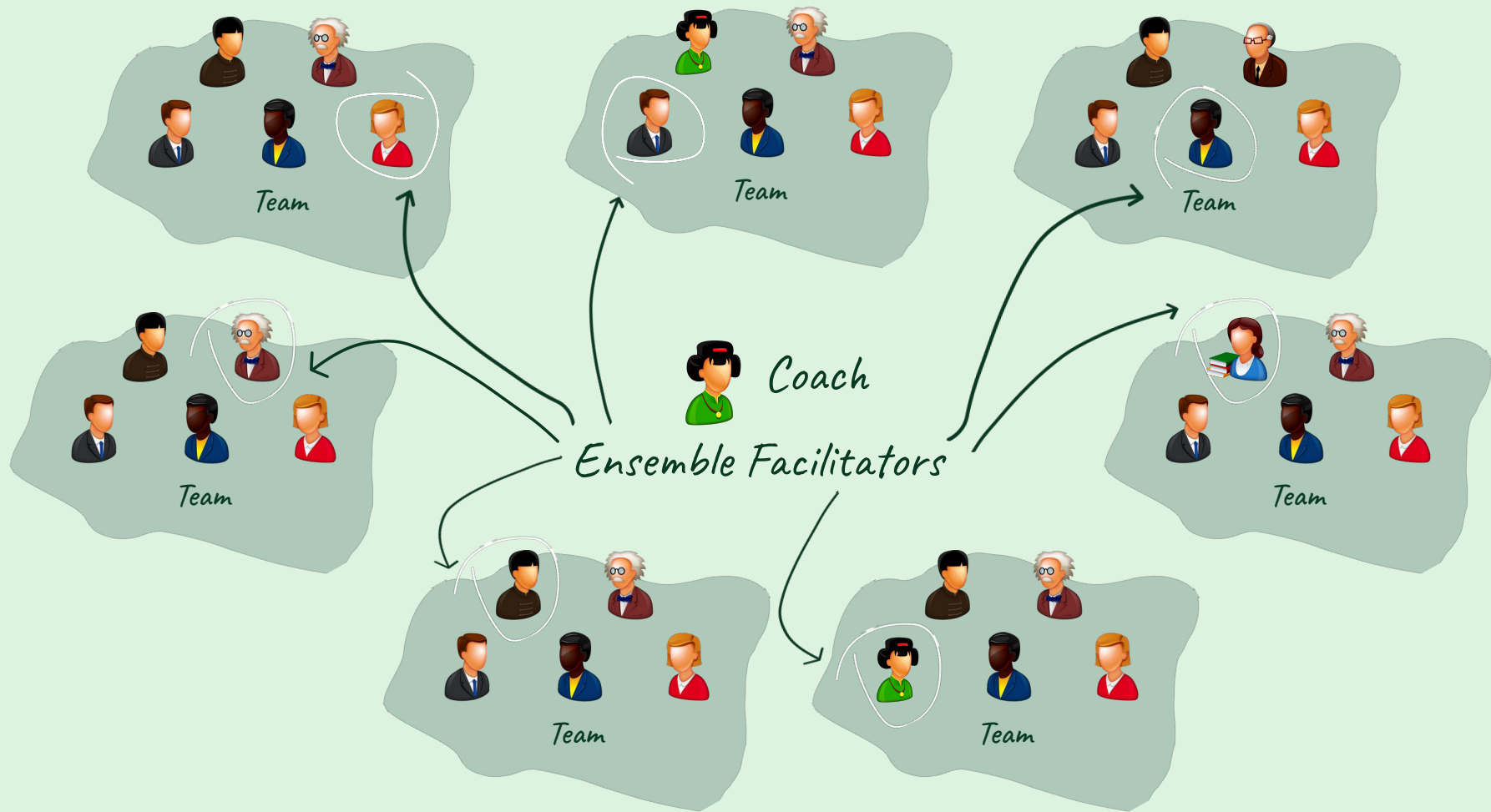
TDD in a code kata



TDD “in real life”



Flickr Ruth Hartnup



Large Corporation Misunderstanding

- No interest so far
- Corporate culture
- “Productivity” concerns

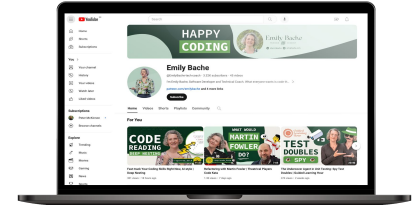


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Software Excellence through Technical Coaching



Image credit:

https://flickr.com/photos/ishikawa_takanori/

